

Final (take home, open book)

Name:

Due January 7, 2009 – please write answers on attached answer sheet.

- 1) Find the equation of the line that passes through (0, 2) and (12, 7).
- 2) Find a line that is parallel to the line in #1 that passes through (1, 5).
- 3) Find a line that is perpendicular to #2 that passes through (0, -3)

Let $f(x)=2x^2+3x+1$. Write a new function g (in terms of x) when f is shifted:

- 4) Up 10
- 5) To the right 4
- 6) To the left 5
- 7) Down 9

For $f(x)=x^4-6x^2+3$, determine:

- 8) any local extrema
- 9) any absolute extrema
- 10) Solve $\frac{x^2+3x+2}{x^2-1} > 0$ using any method.

Consider the rational function $y=\frac{x^2+7x+6}{x+5}$.

- 11) State the equations of any vertical asymptotes, if there are any.
- 12) Identify the equations of any horizontal asymptotes, if there are any.

Use the function shown below to complete the following. $f(x) = \begin{cases} 2x + 8, & x < 0 \\ -2x - 6, & x \geq 0 \end{cases}$

- 13) Graph the function
- 14) Evaluate f at $x= -2, 0, 2$, and 4
- 15) Determine the x values where $f(x)=0$

Use $f(x)=x^2-16$ and $g(x)=x^2-9x+2$ to find and simplify the following.

- 16) $(fg)(x)$
- 17) $(f/g)(x)$
- 18) $(f \circ g)(x)$

Solve the following for x .

- 19) $\frac{1}{3} \log_2 x + 5 = 7$
- 20) $\log_{10} 2x = 1.5$

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